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GEOPHYSICAL VARIABLES AND BEHAVIOR: LXXVII. INCREASED GEOMAGNETIC ACTIVITY AND DECREASED PLEASANTNESS OF SPONTANEOUS NARRATIVES FOR PERCIPIENTS BUT NOT AGENTS [1, 2]

DAVID R. CHURCHILL, M. A. PERSINGER, ALEX W. THOMAS

Laurentian University

Summary.—A total of 48 adults were tested in 24 separate pairs either during the morning (10:00 A.M.) or evening (10:00 P.M.). One member of each pair was instructed to record (write) impressions and descriptions of 8 different art pieces (5 min. each). At the same time the other member of the pair sat in a comfortable chair within an acoustic chamber in another room and wrote an ongoing narrative. The evaluation and activity dimensions of the words that composed the narratives were scored by the Whissell Dictionary of Affect in Language. The increased global geomagnetic activity two days before the experiments was significantly associated (*rhos* about 0.60) with the use of more unpleasant words for people who sat in the quiet chamber only. Implications for the hypothesis of affective concordance between emotionally bonded human beings and its role in episodes of potentially veridical telepathic experiences are discussed.

Epidemiological analyses of several hundreds of spontaneous cases of paranormal experiences concerning death and crisis have indicated that some of these anomalous experiences (a subtype), putative telepathic-clairvoyant episodes, are more likely to occur (or to be detected) during periods of quiet, global geomagnetic activity (Persinger, 1989, 1993a). A similar enhancement of accuracy for these events during periods of quiet, i.e., daily average less than 10 to 15 nanoTesla, was noted for several decades of experimental results (Berger & Persinger, 1991). Greater concordance between the themes of the dreams of the percipient and the content of targets that had been viewed at the same time by agents has also been noted during quiet geomagnetic periods (Persinger & Krippner, 1989).

These experiences have been called putative telepathic-clairvoyant (T-C) phenomena (Persinger, 1974) because their content validity is still probationary and the distinction between telepathy and clairvoyance is more likely to be a consequence of nosology than of mechanism. We (Persinger, 1988, 1993a) have hypothesized that such experiences concerning death and crisis are common species-specific events that utilize brain structures (limbic lobe, i.e., amygdala, hippocampus, parahippocampal gyrus, and anterior cingulate

[1]Thanks to Dr. C. M. Whissell for the use of the computerized Dictionary of Affect in Language.

[2]Please send reprint requests to Dr. M. A. Persinger, Behavioral Neuroscience Laboratory, Department of Psychology, Laurentian University, Ramsey Lake Road, Sudbury, Ontario, Canada P3E 2C6.

gyrus) and neuroelectrical processes (paroxysmal discharges) that are very similar to those involved with subclinical complex partial epileptic seizures (Persinger & Makarec, 1993). The format of the information that results in a T-C experience is predicted to employ the affective processes of the right hemispheric domains rather than left hemispheric categorical or semantic lexicons. Consequently, individuals who experience more right hemispheric intrusions (Persinger, 1993b) because of greater electrocortical homogeneity between the two hemispheres, such as the normal female, the normal left-handed male, or the homosexual male (LeVay, 1993), should experience and report more of this subtype of psi experiences.

If this hypothesis is correct, then T-C experiences would be more probable if the affective state of the percipient shared greater affective (emotional) congruity with the affective characteristics of the target such as a person dying. Because (1) there is poorer representation of linguistic information in the right hemisphere compared to the left hemisphere and (2) the information must be "translated" into linguistic labels and images to facilitate conscious awareness, the specific cognitive images might be erroneous while the emotional dimensions of those linguistic images would be correct. Pursuit of this concept would require objective measurements of the meanings (unpleasant-pleasant, inactive-active) of words (Whissell, 1989) rather than their categorical characteristics.

If T-C experiences are initiated by right hemispheric limbic processes that mediate affective concordance between the agent and the percipient, then stimuli which disrupt this compatibility would disrupt the accuracy and occurrence of T-C experiences. Because increased geomagnetic activity is often associated with decreased incidence and accuracy of spontaneous and experimental psi experiences (Persinger, 1993a; Persinger & Krippner, 1989), we predicted that enhanced global geomagnetic activity should decrease the affective concordance as defined by greater discrepancies between quantitative indices of word meanings between the designated agents and percipients within an optimal experimental setting. Two logical extrapolations were considered, (1) the hedonistic (unpleasant-pleasant) dimension of word meanings should be more highly correlated with ambient geomagnetic activity than the activity dimension and (2) daytime experiences should be more strongly correlated with the temporally contiguous geomagnetic activity than nighttime experiences because this type of psi phenomena shows diurnal weakness. Stated alternatively, psi experiences are so frequent and intense during the nocturnal hours that geomagnetic activity would exhibit less conspicuous influence.

A total of 24 pairs ($n = 48$) of men and women volunteered as subjects; their median age was 24 years (range 19 to 35). Half of the pairs were tested at 1000 hours local time while the others were tested at 2200 hours local

time. Each pair of subjects were given the same instructions. One (designated as percipient) of the pair sat in a comfortable chair within an acoustic chamber. The other member (designated as agent) of the pair sat in front of a desk in another room approximately 10 m from the chamber. For half the number of pairs who were tested during the evening and during the day, the agent was a male.

The agent was instructed to open one of eight manila envelopes, to remove the 8- x 11-in. colored picture, and to write a narrative about personal reactions to this picture for 5 minutes. After the agent had removed the picture, the percipient heard the word "begin" (by one of two experimenters who sat in a hallway between the two rooms, monitored the time, and instructed both the agent and percipient to initiate tasks) through the chamber speaker. The percipient had been instructed to begin writing and describing any images that occurred. When the time elapsed, the agent replaced the picture within the envelope, removed the second picture, and began the written narrative for that picture. The percipient was told to begin, which was the cue to draw a line that separated the current from the previous written material. The same procedure was employed until all of the targets had been examined. The eight target pictures included published art work that included "Saturn Devouring," the "Three Horsemen," "Flowers," and "The Pensive Artist"; they had been selected by researchers (not directly involved with this experiment) to obtain a range in extreme emotional themes.

The narratives for each picture for the agents and the narratives (for the equivalent periods) for the percipients were scored automatically according to the Whissell Word Meaning Dictionary program (Whissell, 1989). The means and standard deviations for all six pictures (combined) for evaluation (unpleasant-pleasant) and activity (inactive-active) dimensions were computed. The means (and standard deviations) for the activity and evaluative dimensions were 4.21 (0.22) and 4.37 (0.15), respectively, for the agents and 4.03 (0.19) and 4.54 (0.20) for the percipients. These are comparable to those of previous studies (Ruttan & Persinger, 1989). Three-way analyses of variance (MANOVA: SPSS) as a function of affective dimension (activity vs evaluative), pair (agent vs percipient), and time of day (not repeated; day vs night) showed no statistically significant day-night effect ($F_{1,22} = 1.31$, $p > .05$). The only statistically significant combination was an interaction between pair and affective dimension ($F_{1,22} = 16.13$, $p < .001$); it was based on the use of words by the agents who employed more active than inactive meanings (paired t test = 3.10, $p < .01$) but more frequent unpleasant meanings (paired t test = 3.68, $p < .01$) than the percipients.

The following global geomagnetic indices were employed, (1) the mean daily aa values for the day of and for each of the three days before and after

the experiment, (2) mean half-day values for the global geomagnetic activity for the time-adjusted interval of testing (1000 or 2200 hours) for the half-day of and for each of the six half-days before and after the time of the experiment (for verification of any whole-day geomagnetic correlates), and (3) the Kp values for the 3-hr. interval (adjusted for time discrepancy between local and international values) at the time of the experiment and for each of the three 3-hr. intervals before and after the experiment. There were no statistically significant differences between the magnitudes of the sequential increments for the daily values, half-day values, or three-hourly Kp values. The means (and standard deviations) for these values during our experimental periods were 30.9 (7.0), 29.8 (9.6), and 2.6 (0.8), respectively; the specific values for the key day, key half-day, and key 3-hr. intervals were 31.5 (16.2), 28.5 (16.6), and 3.1 (1.2), respectively.

Cases for analyses were pairs of subjects. Spearman nonparametric (verified with Pearson's *r*) correlations showed a statistically significant negative correlation (*rho* = − 0.56) between the magnitude of the evaluative and activity scores for the agents but not the percipients (*rho* = − 0.27). The correlations for the evaluative (0.11) and activity (0.07) scores between the (pairs of) agents and percipients were not statistically significant. Emotional concordance values were calculated by subtracting the evaluative and activity scores (separately) of the percipient from these values for the agent for each pair of subjects. Means and *SD*s for these differences were 0.18 (0.29) for activity and − 0.18 (0.23) for evaluation. Spearman *rho* correlations were calculated (SPSS) for these values, the scores for the agents, and the scores for the percipients with (1) the whole-day aa values, (2) the half-day geomagnetic values, and (3) the Kp 3-hr. indices. Separate analyses of the experiments conducted during the morning (1000 hours) and the evening (2200 hours) served as verifications of internal consistency.

As hypothesized, only the concordance measures (net differences between scores of the agent-percipient pairs) along the evaluative but not the activity dimension for the narratives were significantly associated with geomagnetic activity; however, the temporal match between the geomagnetic activity and the time of the experiences was not supported. The disparity between the evaluative scores for the agent and percipient was significantly associated only with the geomagnetic activity two days before the time of testing ($\rho_{24} = 0.48$, $p < .01$), specifically, 1.5 to 2.0 days before testing ($\rho = 0.43$, $p < .01$); activity during the successive 3-hr. intervals before, during, and after the experiments was not significantly ($p > .05$) associated with emotional concordance. Concordance between evaluative scores of the agent-percipient pairs who were tested during the day ($\rho = 0.57$, $p < .05$) was significantly associated only with geomagnetic activity two days previously; for pairs who were tested at night, concordance was significantly associated with

geomagnetic activity two (-0.47, $p<.05$) and three days (-0.48, $p<.05$) before the key day. However, the peak correlation with the geomagnetic activity 1.5 to 2.0 days (three half-day periods) before the test period was statistically significant only for those tested during the day (0.52, $p<.05$) but not for those tested at night ($\rho = 0.35$, $p>.05$).

These results indicated that enhanced geomagnetic activity two days before the key (experimental) days was associated with enhanced discrepancy in the hedonistic themes of the experiences between the designated agents and percipients. If affective concordance is a significant factor in spontaneous telepathic-clairvoyant experiences, then this discrepancy would be expected to interfere with the accuracy or incidence of these phenomena. Subsequent analyses indicated that only the percipients' (but not the agents') use of words with greater unpleasantness increased as the geomagnetic activity increased two days ($\rho = 0.55$, $p<.01$) before and particularly during the 1.5 to 2.0 half-day intervals ($\rho = 0.67$, $p<.01$) before the narratives were written. Significant correlations between the evaluative dimensions of the words used to describe the picture and any antecedent or concurrent geomagnetic activity were not observed for the agents. Worthy of note, however, was the only statistically significant association between activity scores for the agents and geomagnetic activity two days before the experiences ($\rho = 0.62$, $p<.001$).

Although one would expect the emotional meanings of the words employed to describe a sequence of graphic art work to be determined by the details of these powerful perceptual stimuli rather than by geomagnetic activity, the contribution of the latter to affective processes that influence the emotional meanings of words during spontaneous narratives within a quiet setting is probable. Richards, Persinger, and Koren (1993) have shown that the affective dimensions of narratives can be affected by 30-min. exposures to weak 1-microTesla (10-milligauss) pulsed fields whose intensities are about 100 times greater than geomagnetic indices.

We did not measure telepathic-clairvoyant information in this study and there was no evidence of significant concordance between the pairs of agent-percipients. If affective concordance is a significant step in this process, then enhanced geomagnetic activity two days before a possible telepathic event would facilitate its detection because the percipient's mood would be probabilistically more congruent with the mood of the agent during death or crisis.

The statistically significant association between the percipients' evaluative state and enhanced geomagnetic activity two to three days before the experiences may explain a discrepancy that we (Persinger & Krippner, 1989) observed in the original Maimonides Dream Telepathy studies (Ullman, Krippner, & Vaughan, 1973). There was a small (about 11%) group of cases that

occurred during quiet (<10 to 15 nT) geomagnetic periods yet exhibited psi-missing, i.e., a marked mismatch between the themes of the percipients' dreams and the themes of the target pictures that were viewed by the agents (Ullman, Krippner, & Vaughan, 1989). Inspection of the original analyses and scattergrams indicated that this group of cases was associated with extreme geomagnetic activity during the two to three days that preceded the nights of the experiments.

The second phase of the process, according to our model, would require a concurrent decrease in geomagnetic activity at the time of the event. This would increase the signal/noise ratio so that right hemispheric intrusions (such as dreams) are more likely to be registered in left hemispheric awareness (Persinger, 1993b). Because the mean daily aa values during the period of our experimentation exceeded the required values (i.e., <10-15 nT) that are associated with spontaneous telepathic-clairvoyant phenomena, this component of the model must still be evaluated.

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